

# CALANOID COPEPODS FROM THE CARIBBEAN SEA AND GULF OF MEXICO. 1. NEW SPECIES AND NEW RECORDS FROM MIDWATER TRAWL SAMPLES<sup>1</sup>

GEORGE D. GRICE

*Woods Hole Oceanographic Institution, Woods Hole, Massachusetts*

## ABSTRACT

Two new species and the males of two species of calanoid copepods are described from specimens found in collections from midwater trawling in the Caribbean Sea and Gulf of Mexico. Twenty species of calanoid copepods are reported as new records for these areas.

The copepod fauna of the Caribbean Sea and Florida Current are becoming better known as the result of continuing studies by Harding B. Owre and Maria Foyo, of the University of Miami. In a recent and extensive study of the literature concerning copepods in the Caribbean Sea and Straits of Florida, including analyses of many collections made with plankton nets and midwater trawls in those areas, Owre & Foyo (1967) recognized 166 species of calanoid copepods.

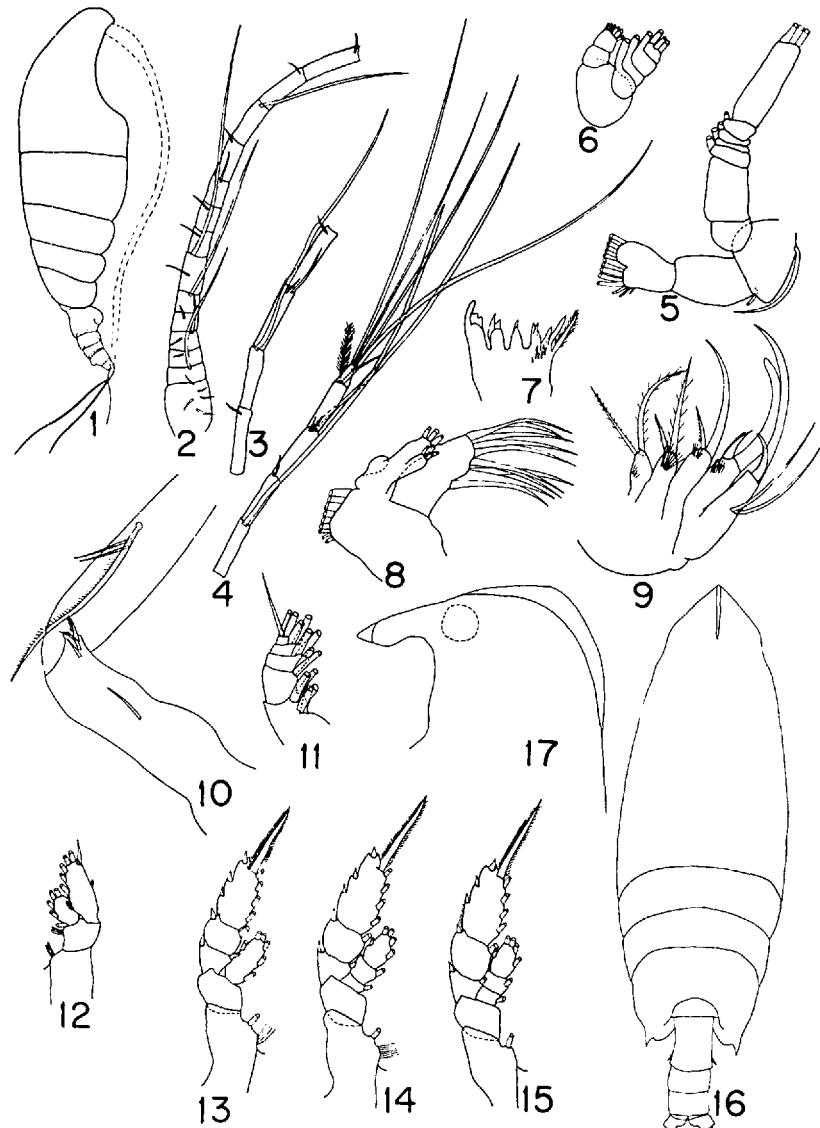
During June, 1966, numerous collections were made with a 10-ft Isaacs-Kidd midwater trawl and several collections with a 25 ft × 25 ft Marino-vich midwater trawl under the direction of Dr. R. H. Backus in the Caribbean Sea, Gulf of Mexico, and Straits of Florida from R/V CHAIN. Samples of 46 collections from the first two areas were examined and representatives of the larger species of calanoid copepods removed and identified. In all, 80 species of calanoids were identified, including two undescribed species and two very poorly known species. The males of two species were identified for the first time. Seventeen new records have been established for this area of the western North Atlantic. Holotype specimens of the new species have been deposited in the U. S. National Museum. Data for the collections are given in Table 1.

## **Chiridiella chainae n. sp.** Figs. 1-15

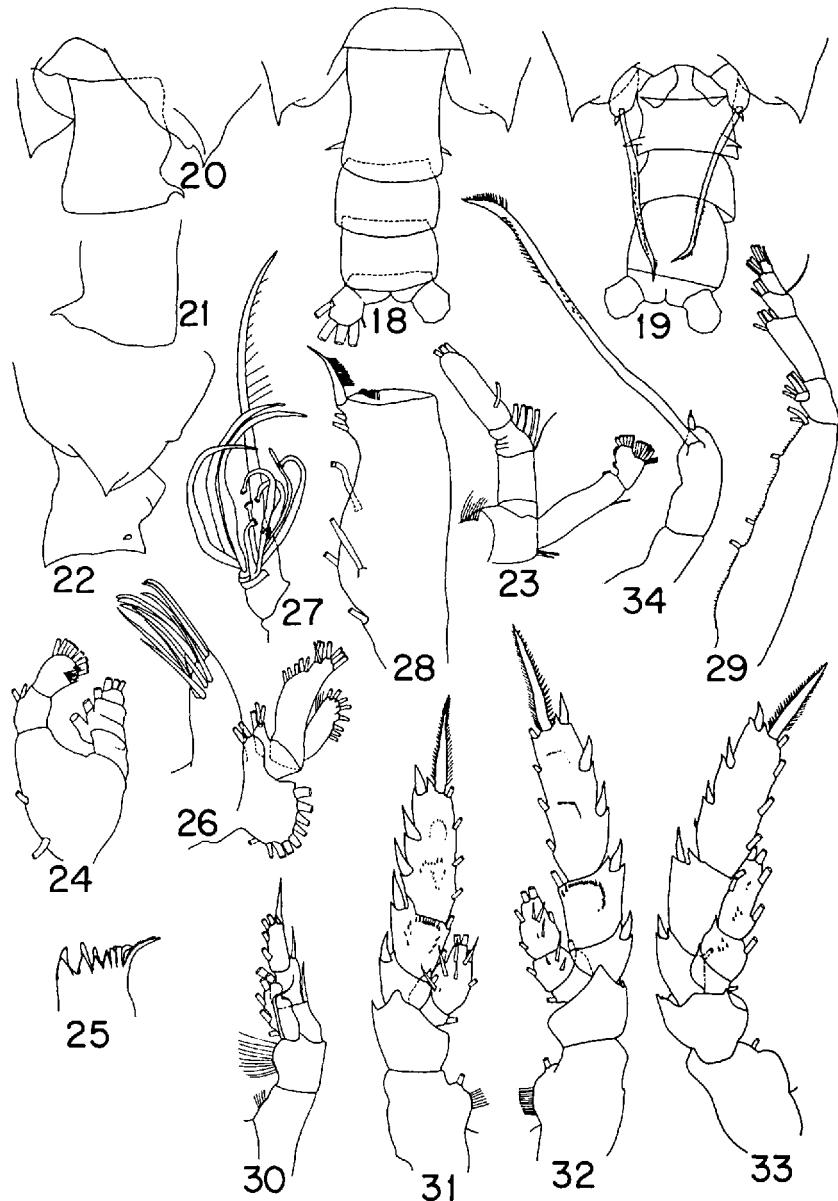
*Material Examined*.—Isaacs-Kidd midwater trawl No. 1288 (one female).

*Diagnosis (Female)*.—Cephalothorax about four times length of abdomen. Head weakly fused with first thoracic segment. Fourth and fifth thoracic segments fused. Posterolateral margin of cephalothorax somewhat trun-

<sup>1</sup> Contribution No. 2057 from the Woods Hole Oceanographic Institution. This study was supported in part by the National Science Foundation Grants GB 6052 and GA 286.



FIGURES 1-17.—1-15, *Chiridiella chainae* n. sp., female: 1, lateral view; 2, antennule, segments 1-14; 3, antennule, segments 15-18; 4, antennule, segments 19-23; 5, antenna; 6, mandibular palp; 7, cutting edge of mandibular blade; 8, maxillule; 9, maxilla; 10, basal portion of maxilliped; 11, distal portion of maxilliped; 12, first leg; 13, second leg; 14, third leg; 15, fourth leg.—16-17, *Scotocalanus backusi* n. sp., female: 16, dorsal view; 17, anterior end of head, lateral view.



FIGURES 18-34. *Scottocalanus backusi* n. sp., female: 18, abdomen, dorsal view; 19, abdomen, ventral view showing fifth pair of legs; 20, genital segment, right oblique view; 21, genital segment, left oblique view; 22, genital segment, lateral view; 23, antenna; 24, mandibular palp; 25, cutting edge of mandibular

TABLE 1

DATA FOR COLLECTIONS MADE WITH THE ISAACS-KIDD MIDWATER TRAWL

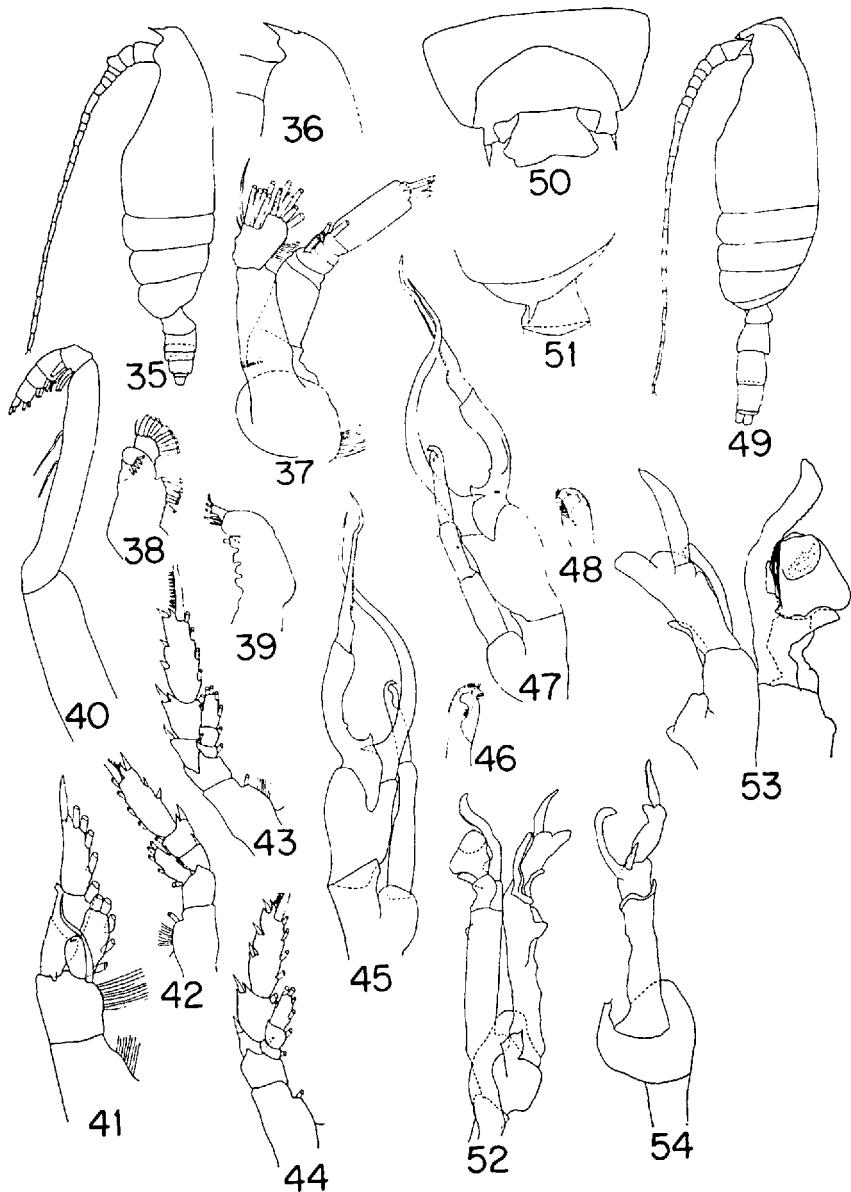
Collection No.	Date (1966)	Position <sup>1</sup>	Maximum depth <sup>2</sup> of trawl (m)
1269	3-VI	11°03'N, 77°44'W	421
1270	3-VI	11°02'N, 77°54'W	274
1271	3-VI	11°03'N, 78°41'W	128
1272	4-VI	12°09'N, 78°30'W	555
1278	6-VI	16°48'N, 79°14'W	280
1281	6-VI	17°08'N, 79°35'W	205
1282	7-VI	17°07'N, 79°32'W	185
1288	10-VI	20°40'N, 84°26'W	320
1289	10-VI	21°11'N, 85°12'W	170
1291	12-VI	22°54'N, 91°36'W	57
1294	17-VI	20°48'N, 95°48'W	100
1296	18-VI	23°06'N, 94°53'W	205
1297	19-VI	23°13'N, 94°50'W	128
1298	19-VI	23°55'N, 94°00'W	370
1299	19-VI	24°04'N, 93°52'W	460
1300	19-VI	24°32'N, 93°16'W	460
1301	20-VI	24°36'N, 93°12'W	310
1304	21-VI	26°36'N, 90°41'W	430
1305 <sup>3</sup>	21-VI	26°36'N, 90°41'W	510
1307	22-VI	27°01'N, 90°02'W	95
1308	22-VI	26°52'N, 89°23'W	549
1309	22-VI	26°31'N, 88°48'W	155
1310	23-VI	26°12'N, 87°54'W	2150
1311	24-VI	24°06'N, 84°14'W	365

<sup>1</sup> At start of trawl.<sup>2</sup> Depth determined from Time Depth Recorder.<sup>3</sup> Marinovich trawl.

cate. Abdomen four-segmented, genital segment protruded ventrally. Antennule extends slightly beyond caudal rami. Exopod of antenna about twice length of endopod. Mandibular blade with well-developed teeth and one seta. Palp small, exopod with six setae, endopod with six setae. Gnathobase of maxillule large, exopod absent. Maxilla with five lobes, the first four each bearing a large and a small seta. The distal lobe has, in addition to a large and a small seta, two fine setae. Maxilliped with slender basipod and a short five-segmented endopod. First leg with one-segmented exopod and endopod. Second leg with three-segmented exopod and one-segmented

&lt;

blade; 26, maxillule; 27, distal end of maxilla; 28, basal portion of maxilliped; 29, distal portion of maxilliped; 30, first leg; 31, second leg; 32, third leg; 33, fourth leg; 34, fifth leg.



FIGURES 35-54.—35-48, *Euchirella splendens*, male: 35, lateral view; 36, anterior end of head, lateral view; 37, antenna; 38, maxillule; 39, maxilla; 40, maxilliped; 41, first leg; 42, second leg; 43, third leg; 44, fourth leg; 45, fifth pair of legs; 46, distal end of left fifth leg, enlarged; 47, fifth pair of legs, other side; 48, distal end of left fifth leg, enlarged.—49-54, *Scottocalanus corystes*,

endopod. Third and fourth legs with three-segmented exopods and endopods. Total length 3.56 mm.

*Holotype*.—Deposited in U. S. National Museum as USNM 122501.

*Remarks*.—This species resembles *C. brachydactyla* Sars, 1907, and *C. subaequalis* Grice & Hulsemann, 1965, in the structure of the maxilla, but these two species have an exopod on the maxillule. No exopod is present on the maxillule of *C. chainae*. Also, *C. chainae* is different from the above two species in having only one lateral spine on the exopod of the first leg. The species is named for the R/V CHAIN.

**Scottocalanus backusi, n. sp.**

Figs. 16-34

*Material Examined*.—Isaacs-Kidd midwater trawls: No. 1300 (one female), No. 1305 (three females), and No. 1311 (one female).

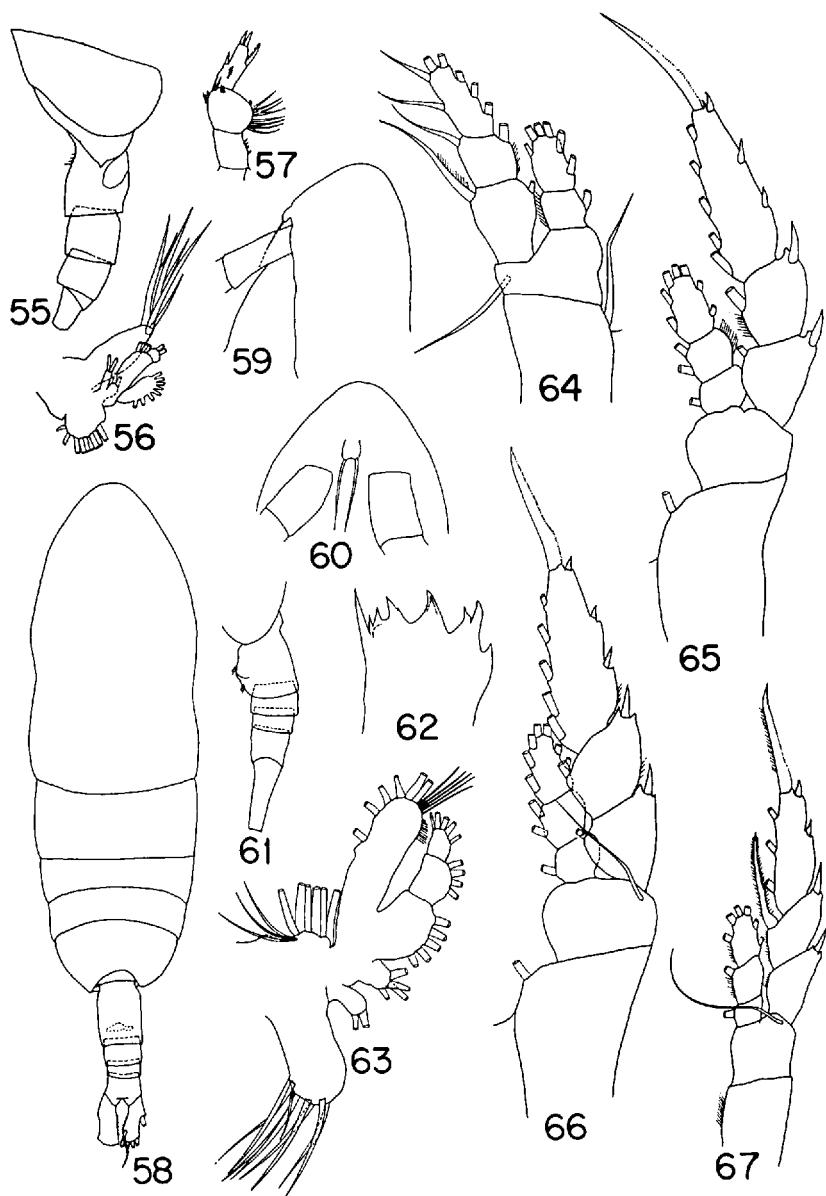
*Diagnosis (Female)*.—Cephalothorax about 3.9 times length of abdomen. Head fused with first thoracic segment. Fourth and fifth thoracic segments fused. Posterior end of cephalothorax produced into symmetrical points. Anterior end of head with crest. Rostrum thick, two-pointed. Abdomen four-segmented. Genital segment bearing on each side a conspicuous spine-like protrusion. Caudal rami about as long as wide. Antennules exceed caudal rami by last two segments. Exopod of antenna about 1.4 times the length of the endopod. Mandibular blade with eight teeth and a seta, terminal endopodal segment with two rows of small spines. Maxillule with twelve spines on first inner lobe, two setae on second inner lobe, three setae on third inner lobe, five setae on second basal segment, seven setae on endopod, eight setae on exopod, and nine setae on first outer lobe. Distal end of maxilla with vermiform and bulb-tipped sensory appendages. Maxilliped with five-segmented endopod. Segments 1 through 5 bearing 4, 4, 3, 4, and 4 setae, respectively. Exopods of first to fourth feet three-segmented, endopod of first leg one-segmented, of second leg two-segmented, of third and fourth legs three-segmented. Fifth leg ending in small terminal spine and pre-terminal setiform spine that nearly reaches anal segment. Total length 5.41-5.91 mm.

*Holotype*.—Deposited in U. S. National Museum as USNM 122502.

*Remarks*.—This species is distinguished from all others in the genus by the presence of the two spinelike protrusions which arise from the genital segment. The species is named for Dr. R. H. Backus.

←

male: 49, lateral view; 50, posterior end of cephalothorax, dorsal view; 51, posterolateral corner of cephalothorax; 52, fifth pair of legs, from left side; 53, fifth pair of legs, distal end, enlarged; 54, right fifth leg, another view.



FIGURES 55-67.—55-57, *Cephalophanes tectus*, female: 55, posterior end of cephalothorax and abdomen, lateral view; 56, maxillule; 57, fifth leg.—58-67, *Halopilus furcatus*, female: 58, dorsal view; 59, anterior end of head, lateral

*Euchirella splendens* Vervoort, 1963  
Figs. 35-48

*Material Examined.*—Isaacs-Kidd midwater trawls: No. 1278 (three males), No. 1298 (one male), and No. 1307 (two males).

*Remarks.*—In addition to numerous females, the hitherto unknown male of this species was found. It differs from the males of other species in the presence of a prominent spinous process on the proximal end of the endopod of the right fifth leg. The terminal portion of the left fifth leg has a small spinelike point and numerous small rounded knobs. The total lengths of the males are between 3.48 and 3.60 mm. This species has not been reported from the Caribbean Sea or Gulf of Mexico.

*Scottocalanus corystes* Owre & Foye, 1967  
Figs. 49-54

*Material Examined.*—Isaacs-Kidd midwater trawls: No. 1269 (two males), and No. 1271 (one male).

*Remarks.*—Occurring with females of *S. corystes* were several males which are here considered to be the hitherto unknown males of this species. A prominent crest is present on the anterior end of the head, and each posterolateral corner of the cephalothorax bears a prominent spine. Structural details of the fifth feet, especially the two spines arising from the penultimate segment of the right fifth leg, will distinguish the male from those of other species in the genus. The total lengths of the specimens vary between 4.00 and 4.44 mm.

*Cephalophanes tectus* (Esterly, 1911)  
Figs. 55-57

*Xanthocalanus tectus* Esterly, 1911.

*Material Examined.*—Isaacs-Kidd midwater trawls: No. 1299 (one female), and No. 1304 (one female).

*Remarks.*—I have examined a copepod identified by Esterly as *Xanthocalanus tectus*, which was loaned to me by Dr. Abraham Fleminger, Scripps Institution of Oceanography. This specimen has a large lens on the forehead, apparently overlooked by Esterly, making it clearly referable to *Cephalophanes*. The specimen is identical to the two females which were obtained in the Gulf of Mexico. Esterly's specimen measured 4.25 mm,

←

view; 60, anterior end of head, ventral view; 61, abdomen, lateral view; 62, cutting edge of mandibular blade; 63, maxillule; 64, first leg; 65, third leg; 66, fourth leg; 67, fifth leg.

the present ones 4.00 mm. This species has not been reported from the Caribbean Sea or Gulf of Mexico.

*Haloptilus furcatus* Sars, 1920

Figs. 58-67

*Material Examined.*—Isaacs-Kidd midwater trawl No. 1310 (one female).

*Remarks.*—This specimen is referred to *H. furcatus* although it differs in some details from the original description. The rostrum, not mentioned by Sars, has two filaments in our specimen. There are small differences between Sars's specimen and the present one in the number of setae on the various lobes and segments of the maxillule, maxilla, and maxilliped. The first leg of our specimen has two endopodal segments; in Sars's there are three. The length of the present specimen is 5.83 mm; that of Sars's specimen is 5.70 mm. This species has not been reported from the Caribbean Sea or Gulf of Mexico.

In addition to the above species, 17 other species were found that hitherto have not been reported from the Caribbean Sea or Gulf of Mexico. The species and the numbers of the collections in which they occurred (in parentheses) are as follows: *Chiridiella macrodactyla* Sars (1270); *Chirundinella cara* Tanaka (1269); *Euchirella truncata* Esterly (1270, 1271, 1281, 1282, 1289, 1294, 1296, 1301, 1307, 1309); *Pseudaeiteus armatus* Boeck (1299, 1304); *Valdiviella oligarthra* Steuer (1310); *Euchaeta gracilis* Sars (1291, 1294, 1296, 1300, 1307, 1309); *E. incisa* Sars (1308); *E. pseudotonsa* Fontaine (1300, 1308, 1310); *E. pubera* Sars (1294, 1307); *Cornucalanus indicus* Sewell (1310); *Lucicutia formosa* Hülsemann (1310); *L. maxima* Steuer (1310); *Euaugaptilus filigerus* (Claus) (1297); *E. gracilis* (Sars) (1310); *Heteroptilus attenuatus* (Sars) (1288); *Pachyptilus eurygnathus* Sars (1305); *Candacia elongata* (Boeck) (1272).

#### SUMARIO

#### COPEPODOS CALANOIDEOS DEL MAR CARIBE Y EL GOLFO DE MEXICO. 1.

#### NUEVAS ESPECIES Y NUEVOS REPORTES EN MUESTRAS OBTENIDAS CON RED DE ARRASTRE A MEDIA AGUA

Se examinaron 46 muestras en el Mar Caribe y el Golfo de México obtenidas con red de arrastre a media agua en busca de ejemplares mayores de copépodos calanoideos. Se identificaron ochenta especies incluyendo veinte nuevos reportes para el área. Se describen dos nuevas especies y los machos, hasta ahora desconocidos, de dos de las especies reportadas.

#### REFERENCES

ESTERLY, C. O.

1911. Third report on the Copepoda of the San Diego region. Univ. Calif. Publs Zool., 6: 313-352.

GRICE, G. D. AND K. HÜLSEMANN

1965. Abundance, vertical distribution and taxonomy of calanoid copepods at selected stations in the northeast Atlantic. *J. Zool.*, 146: 213-262.

OWRE, H. B. AND M. FOYO

1967. Copepods of the Florida Current. *Fauna Caribaea*, No. 1, 137 pp.

SARS, G. O.

1907. Notes supplémentaires sur les Calanoides de la Princesse Alice (corrections et additions). *Bull. Inst. Océanogr. Monaco*, No. 101, 27 pp.

1920. Calanoides recueillis pendant les Campagnes de S.A.S. le Prince de Monaco. *Bull. Inst. Océanogr. Monaco*, No. 377, 20 pp.

VERVOORT, W.

1963. Pelagic Copepoda. Part 1. Copepoda Calanoida of the families Calanidae up to and including Euchaetidae. *Atlantide Rep.*, No. 7: 77-194.